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# Trial of the University Assistance Program for Alcohol Use Among Mandated Students\*

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**ABSTRACT. Objective:** The aim of this study was to investigate the effectiveness of a brief intervention for mandated students in the context of the University Assistance Program, a Student Assistance Program developed and modeled after workplace Employee Assistance Programs. **Method:** Participants were 265 (196 males and 69 females) judicially mandated college students enrolled in a large, urban university in the northeast United States. All participants were sanctioned by the university's judicial office for an alcohol- or drug-related violation. Participants were randomized to one of two intervention conditions (the University Assistance Program or services as usual) and were assessed at baseline and 3 and 6 months after intervention. **Results:** Growth curve analyses

showed that, relative to services as usual, the University Assistance Program was more efficacious in reducing past-90-day weekday alcohol consumption and the number of alcohol-related consequences while increasing past-90-day use of protective behaviors and coping skills. No significant differences in growth trajectories were found between the two intervention conditions on past-90-day blood alcohol concentration, total alcohol consumption, or weekend consumption. **Conclusions:** The University Assistance Program may have a possible advantage over services as usual for mandated students. (*J. Stud. Alcohol Drugs*, Supplement No. 16: 45-56, 2009)

**H**AMONG college students (Chen et al., 2005; Johnston et al., 2007; Wechsler and Nelson, 2008; Wechsler et al., 2002) and is the most frequent reason for emergency medical care and cases of campus discipline (Stone and Lucas, 1994; Wright and Slovis, 1996). This problem is not abating, as college campuses have witnessed an increase in arrests and violations of alcohol policies over the past decade (Porter, 2006; Tevyaw et al., 2007).

Heavy drinking also places college students at high risk for immediate and long-term health consequences, including alcohol-use disorders, driving under the influence, physical/sexual assault, property damage, risky sexual behavior, and academic problems (Hingson et al., 2002, 2005; Knight et al., 2002; Wechsler and Nelson, 2008; Wechsler et al., 2002).

Furthermore, the impact of alcohol use is not limited to students who misuse alcohol themselves but often extends to others around them (Barnett and Read, 2005; Hingson et al., 2002; Wechsler and Nelson, 2008; Wechsler et al., 2002).

The public health significance of problem drinking among college students has led to a national call to action to reduce college student drinking along with the development of a strategic plan to guide initiatives on college campuses (Task Force of the Advisory Council on Alcohol Abuse and Alcoholism, 2002). College campuses have responded by adopting interventions to reduce alcohol, including mandatory sanctions requiring those with violations to participate in alcohol interventions (Anderson and Gadaletto, 2003). Common approaches for mandated students include “disciplinary sanctions, citations, fines, mandatory education programs and counseling” (Barnett et al., 2007, p. 2531). Thus, identifying the most effective intervention approaches among mandated students is an important area of research that has received increasing attention.

## *Interventions with mandated students*

A recent comprehensive review of individual-focused prevention and treatment approaches for college drinking (Larimer and Cronce, 2007) reported on the efficacy of skills-based and motivational interventions that incorporated personalized feedback. Approaches that relied on knowledge alone or on brief values clarification alone or with other informational content were consistently ineffective (Larimer

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and Cronce, 2007). Larimer and Cronce (2007) reported that, of seven studies of interventions with mandated students, five studies showed reduced alcohol use or reduced negative consequences (Barnett et al., 2006; Borsari and Carey, 2005; Fromme and Corbin, 2004; LaChance, 2004; White et al., 2006), whereas two studies showed no reductions in alcohol use (Keillor et al., 2004). Thus, there is emerging support for brief motivational interventions (BMIs) and skills-based interventions with mandated students; however, additional research regarding outcomes of these interventions is warranted, given the limitations of previous studies (e.g., small samples, attrition, and lack of appropriate controls).

Furthermore, previous studies on skills-based interventions and BMIs with mandated students generally have focused only on drinking and consequences outcomes, which highlights the need for evaluations of other outcomes relevant to the theoretical underpinnings of the interventions. For example, studies on both protective behavioral strategies (Martens et al., 2005) and cognitive-behavioral strategies that can be used to reduce alcohol consumption and related consequences have shown that college students who use protective behavioral strategies report fewer alcohol-related problems than those who do not (Benton et al., 2004; Martens et al., 2005, 2007), even controlling for alcohol consumption. Similarly, a recent study on alcohol use, negative affect, and coping motives for drinking (Martens et al., 2008) found a strong relationship between alcohol use and alcohol-related consequences among college students who were high in both negative affect and coping drinking motives. Other studies (Borsari et al., 2007a; Carey et al., 1990; O'Connor and Colder, 2005; Rutledge and Sher, 2001) reported students who lack coping skills are more likely to use alcohol to cope with stressors or negative emotions, suggesting a need for more research into the effectiveness of coping skills interventions. Both skills-based interventions and BMIs recognize the critical role of protective behavioral strategies and coping skills and have integrated them into the interventions. Thus, evaluation of protective behavioral strategies and coping skills outcomes, in addition to alcohol-use outcomes, can provide further insight regarding the effectiveness of specific intervention components.

#### *Employee assistance programs as a model for college student programs*

Historically, Employee Assistance Programs (Chan et al., 2004; Employee Assistance Professional Association, 1990; Masi, 2005; Steele, 1989) were developed primarily to treat substance abuse among employees (Hartwell et al., 1996; Masi, 2002, 2005; Moore and Forster, 1993). However, the scope of services has broadened beyond problem substance use to address all types of personal problems, including mental health and family issues (Masi, 2005; Roman, 1980; Steele, 1989) through assessment, brief intervention and

counseling, referral services, employee orientation, employee outreach and education, and critical incident services (Masi, 2005). Despite the breadth of services provided within Employee Assistance Programs and their broad adoption by employers (Hartwell et al., 1996; Masi, 2005; Walsh et al., 1991), its efficacy has not been well studied (Colantonio, 1989; Masi, 2005; Moore and Forster, 1993; Osilla et al., 2008). The limited research available has produced mixed support for the efficacy of Employee Assistance Program services, in part because of the broad variety and variable quality of services delivered in these real-world settings (Chan et al., 2004; Osilla et al., 2008; Reynolds and Lehman, 2003; Walsh et al., 1991; Zarkin et al., 2001). Nevertheless, a recent study (Osilla et al., 2008) comparing motivational interviewing in the context of Employee Assistance Program services with services as usual (SAU) showed that clients in the BMI group had significant reductions in peak number of drinks per occasion, peak blood alcohol concentration, and alcohol-related problems, compared with those in the SAU group. The study also found that, regardless of intervention condition, average work performance improved over time for all participants (Osilla et al., 2008). This suggests that alcohol concerns can be effectively addressed through use of evidence-based BMI services in Employee Assistance Program settings. However, the study by Osilla and colleagues (2008) had several limitations, including small sample size, high attrition, and problems with randomization that affect interpretation of results. Thus, research to address these limitations is needed.

With the broad adoption of Employee Assistance Programs in the employment setting, some academic institutions have adapted this model to Student Assistance Programs to address psychosocial and behavioral concerns that may interfere with academic performance (Moore and Forster, 1993; Veerer and Blakemore, 2006; Wilburn et al., 2007). Like Employee Assistance Programs, Student Assistance Programs address a spectrum of problems experienced by college students and link them to external providers for continued care (Manderscheid et al., 2007; Moore and Forster, 1993; Veerer and Blakemore, 2006). Evidence of Student Assistance Program effectiveness is based on use rates of 5%, which meet or exceed those typical of Employee Assistance Programs (Wilburn et al., 2007). In addition, evaluations of pre-post intervention alcohol and other drug use indicate significant declines, from a mean (SD) of 6.94 (4.5) days to 5.61 (3.6) days per month for Employee Assistance Program participants (Veerer and Blakemore, 2006). Moreover, rates of student self-referral (18.5%) and peer referral (11.2%) suggest Student Assistance Programs have earned student acceptance, something particularly important when determining the success of a student program (Wilburn et al., 2007). Thus, Student Assistance Programs represent a promising approach to reaching students in need of services for alcohol use, other drug use, and mental health. However,

evaluation studies of Student Assistance Programs are sparse, and published studies have typically used short-term pre-post designs in the absence of randomization, control groups, or comparison groups and have raised questions regarding generalizability of findings based on small and selective samples.

### Study purpose

The current study investigated the effectiveness of a brief intervention in the context of the University Assistance Program (UAP), a Student Assistance Program developed and modeled after workplace Employee Assistance Programs (Chan et al., 2004; Employee Assistance Professional Association, 1990; Masi, 2005, Steele, 1989). The UAP program in the present study provides services to both mandated and self-referred students who present with alcohol or with alcohol and mental health problems. In this study, we report findings on mandated students. To reduce stigma and encourage service use, UAP provides services outside the traditional mental health services offered on campus. Other unique features of the UAP program include assessment and brief interventions tailored to the student's presenting problems, with an option for additional care and/or referrals, and costs for services borne by the university rather than by the student. The UAP also provides outreach and education to the student body and the university community.

The current study aimed to add to the literature on interventions with mandated students and address limitations of previous studies of UAP interventions. We hypothesized that, in comparison with mandated students receiving SAU, participants in the UAP would show reductions in past-90-day total weekly, weekend, and weekday alcohol consumption; blood alcohol concentration; and alcohol-related consequences, and would be less likely to report past-90-day heavy episodic drinking. We further hypothesized that UAP participants would report more frequent use of protective behavioral strategies and improved coping skills relative to the SAU comparison group.

### Method

All methods and procedures were reviewed and approved by the university's institutional review board.

### Recruitment and participants

All ( $N = 683$ ) students sanctioned by the university's judicial office for a first-time serious offense or second offense related to their alcohol or drug use were informed that they had the option of participating in the research study as an alternative to the sanction. Students were eligible to participate if they were 18 years of age or older and had not participated in any other alcohol research study being conducted at the

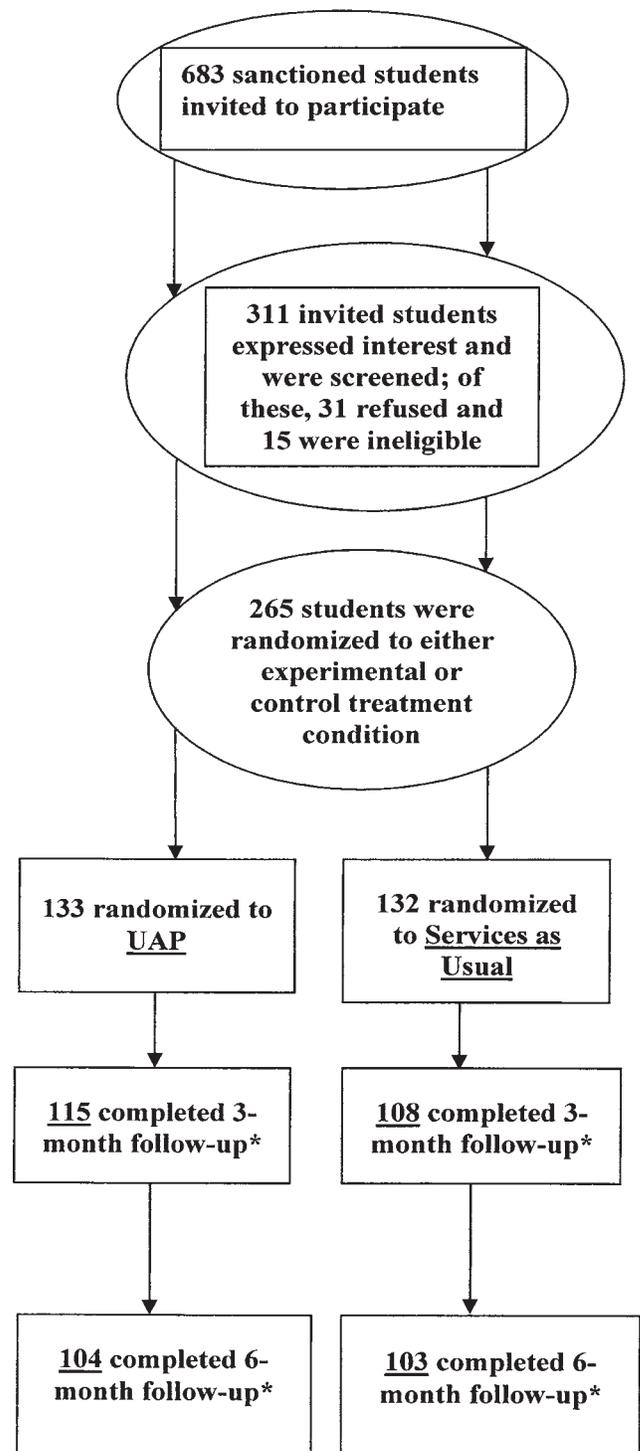


FIGURE 1. Flow of study participants. UAP = University Assistance Program. \*As of October 15, 2008. Students who did not complete the 3-month follow-up survey within a 30-day "completion window" following the date on which they were scheduled to complete it were considered "lost to follow-up." A total of 265 participants were eligible for the 3-month follow-up assessment at the time of the analyses; of these, 223 completed it, resulting in a completion rate of 84.2%. A total of 249 participants were eligible for the 6-month follow-up at the time of the analyses; of these, 207 completed it, resulting in a completion rate of 83.1%.

TABLE 1. Baseline comparisons of characteristics by intervention condition

Variables	University Assistance Program ( <i>n</i> = 133)		Services as usual ( <i>n</i> = 132)		<i>p</i>
	<i>n</i> (%)	Mean (SD)	<i>n</i> (%)	Mean (SD)	
<b>Demographics</b>					
<b>Gender</b>					
Male	96 (71)		100 (76)		
Female	38 (29)		31 (24)		.32
<b>Age category</b>					
<21 years	107 (80)		112 (85)		
≥21 years	26 (20)		20 (15)		.34
<b>Race/ethnicity</b>					
White	122 (91) <sup>a</sup>		120 (91) <sup>a</sup>		.81
Asian	4 (3)		6 (5)		.51
Hispanic	9 (7)		7 (5)		.62
Black	2 (1)		4 (3)		.40
<b>Sexual orientation</b>					
Heterosexual	127 (95)		128 (97)		.53
All other categories	6 (5)		4 (3)		
<b>Year of study</b>					
Freshman	74 (56)		78 (59)		.79
Sophomore	38 (28)		37 (28)		
Middler <sup>b</sup>	17 (13)		14 (10)		
Junior/senior/grad school	4 (3)		3 (3)		
<b>Current student residence</b>					
On campus	113 (86)		118 (89)		.35
Off campus	19 (14)		14 (11)		
<b>Prior OSCCR violation</b>					
No	91 (70)		101 (78)		.15
Yes	38 (30)		28 (22)		
<b>Outcomes</b>					
<b>Alcohol use</b>					
Total weekly consumption		18.47 (12.56)		16.75 (10.90)	.23
Total weekend consumption		16.91 (10.70)		15.46 (9.75)	.25
Total weekday consumption		1.56 (3.40)		1.29 (2.73)	.47
Blood alcohol concentration		0.18 (0.11)		0.16 (0.11)	.14
<b>Heavy episodic drinking</b>					
No	8 (6)		9 (7)		.80
Yes	123 (94)		122 (93)		
<b>Consequences of alcohol</b>					
Coping skills		63.63 (8.59)		64.20 (7.42)	.56
Use of protective behaviors		40.17 (9.24)		40.15 (7.05)	.99

Notes: OSCCR = Office of Student Conduct and Conflict Resolution. <sup>a</sup>Percentages exceed 100 because four students checked more than one racial/ethnic category; <sup>b</sup>third year of the 5-year academic program.

same university within the past 8 months. If a student was interested in participating, the university's judicial office staff obtained her/his written permission to have study staff contact her/him, at which time an appointment was scheduled to screen the student for eligibility.

Of the total number of students offered the option of participating in the study (Figure 1), 311 (45.5%) expressed interest. Of the 311 participants screened, 31 (10%) refused to participate and 15 (5%) did not meet eligibility criteria. A total of 265 (196 males and 69 females) judicially mandated students (mean age = 20.4 [1.08] years) recruited between September 2006 and April 2008 met the inclusion criteria, signed the informed consent, and were randomized to one of two interventions. Table 1 shows the demographic characteristics of the study participants. About 90% of the study sample was white, whereas 76% of the overall university population is white.

### Study design

The current study used a two (condition) by three (time) randomized clinical trial design. Participants were assessed at baseline and 3 and 6 months after intervention. An intent-to-treat design was used so that participants were assessed at each time point regardless of whether they completed or withdrew from the intervention.

### Intervention conditions

Participants were randomized to one of two intervention conditions: UAP or SAU control condition. For a first-time alcohol offense, UAP participants attended two sessions with a UAP counselor; for a serious first or second offense, three sessions were required. During the initial UAP session, the

clinician conducted a psychosocial assessment covering individual and family history of substance abuse and treatment, psychiatric history, medical and developmental histories, and available social support. The assessment was conducted in a style consistent with motivational interviewing (Miller and Rollnick, 2002) and was structured to obtain information necessary to develop a brief intervention for participants based on their alcohol use and the concerns with which they presented (Dimeff et al., 1999).

Of the 133 participants randomized into UAP, 130 received BMI based on the Brief Alcohol Screening and Intervention for College Students (BASICS) program (Dimeff et al., 1999; Marlatt et al., 1998), a two-session feedback-based intervention incorporating motivational interviewing and skills training. If the student presented with additional social, personal, or adjustment issues, the clinician used one or a combination of the following four approaches to address the other presenting issues within the brief intervention model or as a referral for treatment: (1) solution-focused therapy (de Shazer, 1982, 1985, 1988; de Shazer et al., 1986); (2) stress management (Chiauszi et al., 2008); (3) supportive counseling (Bauer, 1994); and/or (4) coping skills-based interventions (Kaminer et al., 2002).

Of the 130 students who received BASICS, 46 received either one or a combination of the following additional supportive components: solution-focused therapy ( $n = 18$ ), stress management ( $n = 1$ ), coping skills-based intervention ( $n = 25$ ), or supportive counseling ( $n = 30$ ). Three participants did not receive any services but were included in the intent-to-treat analyses because they were randomized to the UAP intervention condition.

The SAU control condition consisted of the standard of care services offered by the university's office of student conduct to students with one or more alcohol offenses. Depending on the severity of the offense, students receiving SAU were mandated to complete either a computer- or group-based program. First offenders ( $n = 66$ ) completed a 2.5-hour Web-based alcohol education program designed to motivate behavioral changes and engage students in practicing safer decision making related to alcohol consumption (Outside the Classroom, Inc., 2008). Those with a more serious first or second violation ( $n = 66$ ) completed a series of three 1.5-hour educational group sessions focusing on the consequences of alcohol use. In addition to group discussions, participants completed journal assignments or other written reports on topics related to alcohol use.

#### *Therapist training*

Two clinicians provided the UAP services. UAP counselors were master's-level or master's-enrolled clinicians who received a minimum 16 hours of training in BASICS and motivational interviewing from two senior trainers; received follow-up consultation from members of the research team

with extensive experience in implementation of BASICS; and were supervised by a licensed clinician with more than 20 years of experience in substance abuse, harm reduction, and motivational interviewing. In addition, therapists completed a checklist of the intervention components that were delivered for each session. The educational group session for the SAU condition was conducted by a master's-level alcohol educator.

#### *Retention*

As of October 15, 2008, 265 participants had completed the baseline assessment, all of whom were enrolled in the study more than 3 months before data analysis and thus were eligible to complete the 3-month follow-up. Of these, 223 completed the 3-month assessment, resulting in a completion rate of 84.2%. A total of 249 participants were eligible for the 6-month follow-up at the same time; of these, 207 completed the 6-month follow-up assessment, resulting in a completion rate of 83.1%.

#### *Measures*

Self-report data were collected at baseline, as well as at 3 months and 6 months after intervention. All surveys were self-administered and completed online by study participants. Participants were compensated \$20.00 for completing the surveys at each assessment time point. Demographic data were collected on gender, race/ethnicity, residence (on/off campus), prior alcohol violation(s), school year (freshman through graduate school), and age.

*Weekly, weekday, and weekend alcohol consumption.* Weekly (7-day), weekday (Sunday-Wednesday), and weekend (Thursday-Saturday) alcohol consumption was measured using the Daily Drinking Questionnaire (Collins et al., 1985), which asked participants to report the number of drinks they consumed on each day of a typical week during the past 3 months. To create the weekly alcohol consumption measure, the number of drinks consumed on each day of a typical week was summed for each participant. Weekend and weekday alcohol consumption variables were created in the same manner. Thursday was considered part of the weekend, based on feedback from student focus groups. Students reported their weekend often began on Thursday night, because many did not have classes on Friday; therefore, students reported that they drink more between Thursday and Saturday than they do between Sunday night and Wednesday.

*Heavy episodic drinking.* Heavy episodic drinking variables were created to reflect gender-based biological differences in alcohol tolerance and metabolism (Task Force of the Advisory Council on Alcohol Abuse and Alcoholism, 2002). The Daily Drinking Questionnaire (Collins et al., 1985) was used to construct this variable, along with two items from the Quantity and Frequency Index (Romelsjo et al., 1995),

which asked participants to report on the number of drinks they consumed “on the occasion they drank most” and “on a typical weekend evening.” Men were classified as heavy episodic drinkers if they reported consuming five or more drinks on any day of a typical week in the past 3 months or “on the occasion they drank most” or “on a typical weekend evening” during the past month. Women were classified as heavy episodic drinkers based on their responses to the same questions, using four or more drinks as a criterion.

*Blood alcohol concentration.* Estimated blood alcohol concentration was based on a “typical” drinking occasion and measured using the following items from the Quantity and Frequency Index (Romelsjo et al., 1995): “On a typical weekend evening, number of drinks you consumed” and “On a typical weekend evening, number of hours spent drinking” during the past month. This variable was created using the following formula (Matthews and Miller, 1979):  $[(\text{consumption} / 2) \times (\text{GC} / \text{weight})] - (.017 \times \text{hours})$ . Consumption represented “number of drinks you drank on a typical weekend evening,” hours represented “number of hours spent drinking” on a typical weekend evening, and GC was a gender constant (9.0 for women; 7.5 for men).

*Consequences of alcohol.* Consequences of alcohol were measured using the 23-item Rutgers Alcohol Problem Index (White and Labouvie, 1989), which assesses the physical and psychological consequences associated with drinking alcohol. Participants were asked “how many times have different consequences (e.g., ‘went to work or school high on alcohol,’ ‘neglected your responsibilities’) happened to you within the past year.” Participants reporting having experienced any of the consequences were then asked how often they experienced each of the consequences within the past 3 months. Participants who did not report having drunk alcohol on any day of the week in the past 3 months were not asked the “past three months” consequence items. Cronbach’s  $\alpha$  coefficient for this measure was .85. Low scores reflected fewer alcohol consequences; higher scores indicated more consequences experienced by participants.

*Coping skills.* A 16-item index to assess participants’ coping skills in managing alcohol or drug use was developed by the project team based on strategies reinforced in BMIs. A 5-point Likert scale, with responses ranging from “strongly disagree” (1) to “strongly agree” (5), was used. Sample items included “I spend time with people who don’t drink or do drugs,” “I can identify and participate in fun activities not related to alcohol or drugs,” “I remind myself of the negative consequences associated with heavy drinking or drug use,” “I give up trying to reach my academic goals because partying is very important to me,” “I talk to someone I trust when I feel down or lonely,” and “I remind myself that I have a lot to offer others.” Low scores indicated poor coping skills, and high scores reflected good coping skills. Cronbach’s  $\alpha$  coefficient for this measure was .81.

*Use of protective behaviors.* Protective behaviors were measured using a 10-item instrument from the American College Health Association study (2005), which assesses participants’ ability to avoid harmful situations while socializing with alcohol. A 6-point Likert scale was used, with responses ranging from “Did not drink” (1) to “Never” (6). Sample items included “How often did you keep track of how many drinks you were having?” “...choose not to drink alcohol?” and “...avoid drinking games?” Cronbach’s  $\alpha$  coefficient for this measure was .88. For this scale, lower scores reflected more frequent use of protective behaviors, and higher scores indicated less frequent use of protective behaviors.

#### *Data analytic strategy*

Growth curve analyses were performed to test the study hypotheses using Mplus Version 4.0 (Muthén and Muthén, 1998-2006). Growth curve analyses estimated individual trajectories of change and tested for slope differences between the two intervention conditions over time. Growth curve models allow for missing data so that even participants with one or more missing follow-up assessments are included in the analyses (Muthén and Muthén, 1998-2006). Because the heavy episodic drinking outcome was binary, we used the categorical option in Mplus that employs a logit link to analyze binary data.

Before conducting the growth curve analyses, we compared participants randomized to the two intervention conditions on the demographic (e.g., gender, school year) and outcome measures to determine whether we should control for any of these variables in the growth curve models. Results of these baseline comparisons are presented in Table 1. There were no significant differences at baseline on any demographic (e.g., age, school year) or outcome variable examined. Consequently, none of these variables was entered as control/covariate in the subsequent growth curve analyses.

## **Results**

### *Tests of hypotheses*

*Hypothesis 1: Over time, students randomized to the University Assistance Program will be less likely to report past-90-day total weekly, weekday (Sunday-Wednesday), and weekend (Thursday-Saturday) alcohol consumption than those randomized to services as usual.* Given the collinearity among past-90-day weekly drinking and the combination of weekend and weekday drinking (all based on the same 7-day period), analyses were performed using a Bonferroni adjustment (i.e., the  $p$  value was set at .016 to account for the three multiple tests). Growth curve analyses showed significant differences in likelihood of past-90-day weekday alcohol consumption between students randomized to UAP and those randomized to SAU ( $z = 2.57, p < .01; d = 1.06$ ). The mean

trajectory of weekday alcohol consumption decreased for students randomized to UAP, whereas it increased for those randomized to SAU. The observed percentages (Figure 2) show that, at the 6-month postbaseline assessment, 12% of UAP students reported past-90-day drinking on weekdays compared with 27% of SAU students. Thus, UAP was significantly more efficacious than SAU in reducing past-90-day weekday alcohol consumption.

Growth curve analyses did not show significant differences in the trajectories of students randomized to UAP and those randomized to SAU on either past-90-day total weekly alcohol or past-90-day weekend alcohol consumption.

*Hypothesis 2: Over time, students randomized to the University Assistance Program will be less likely to report past-90-day heavy episodic drinking than those randomized to services as usual.* Growth curve analyses did not show significant differences in likelihood of heavy episodic drinking between students randomized to UAP and those randomized to SAU.

*Hypothesis 3: Over time, past-90-day estimated blood alcohol concentration on a typical drinking occasion will decrease more in students randomized to the University As-*

*sistance Program than those randomized to services as usual.* Growth curve analyses did not show significant differences in past-90-day blood alcohol concentration between students randomized to UAP and those randomized to SAU.

*Hypothesis 4: Over time, students randomized to the University Assistance Program will experience fewer alcohol-related consequences than those randomized to services as usual.* Growth curve analyses showed significant differences in past-90-day number of reported alcohol-related consequences between students randomized to UAP and those randomized to SAU ( $z = 1.99, p < .04; d = 0.65$ ). The mean trajectory of alcohol-related consequences decreased in UAP students from baseline to 6 months, whereas for participants in SAU, it increased between baseline and 3 months and then decreased to the level it was at baseline. Thus, overall, no change in alcohol-related consequences was observed between baseline and 6 months in the SAU condition (Figure 3). Thus, UAP was significantly more efficacious in reducing the number of alcohol-related consequences than was SAU.

*Hypothesis 5: Over time, students randomized to the University Assistance Program will increase their coping skills more during the 90 days before the assessment than those*

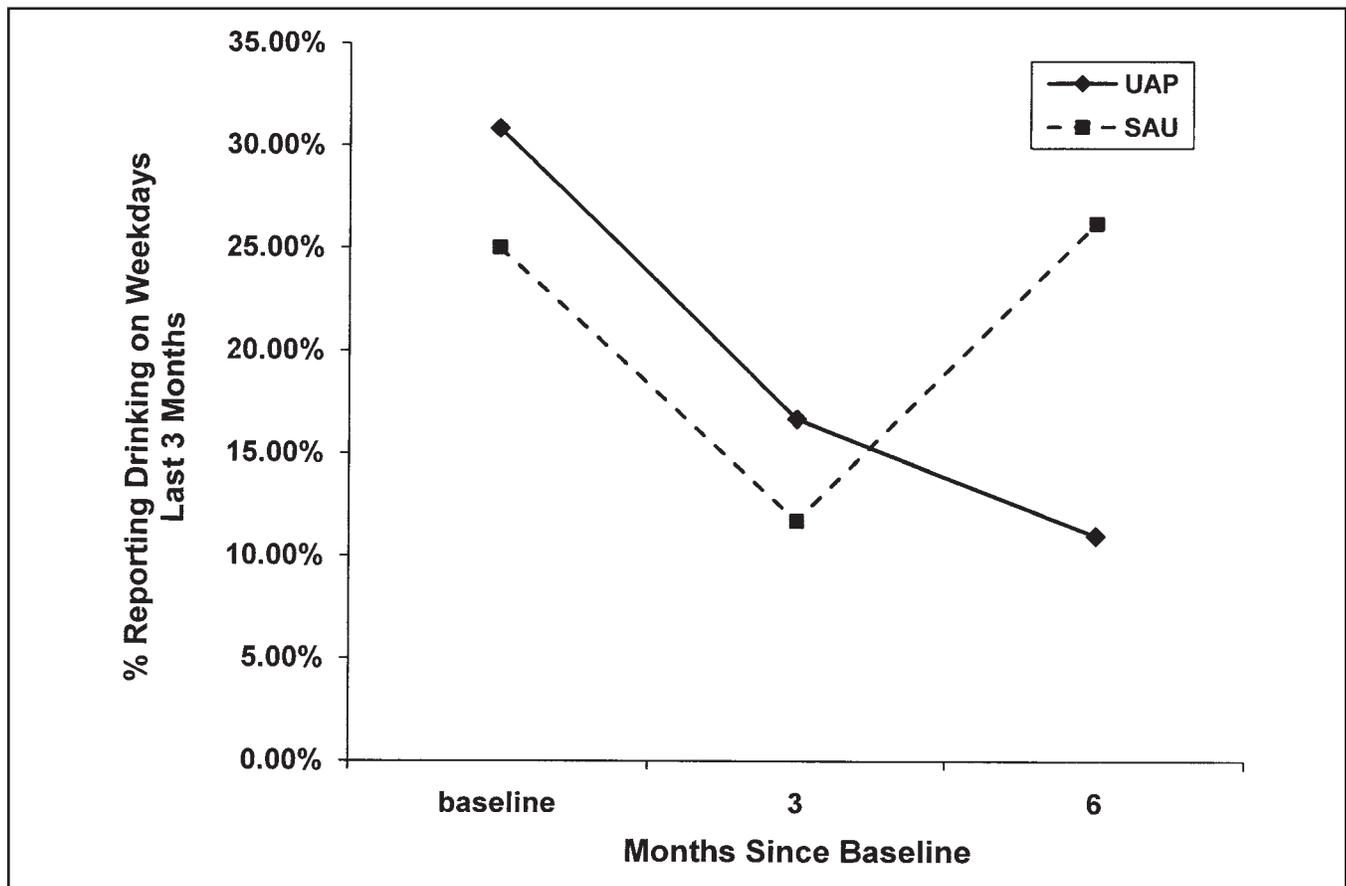


FIGURE 2. Changes in percentages of students consuming alcohol on weekdays (Sunday-Wednesday) from baseline to 6 months; UAP = University Assistance Program; SAU = services as usual

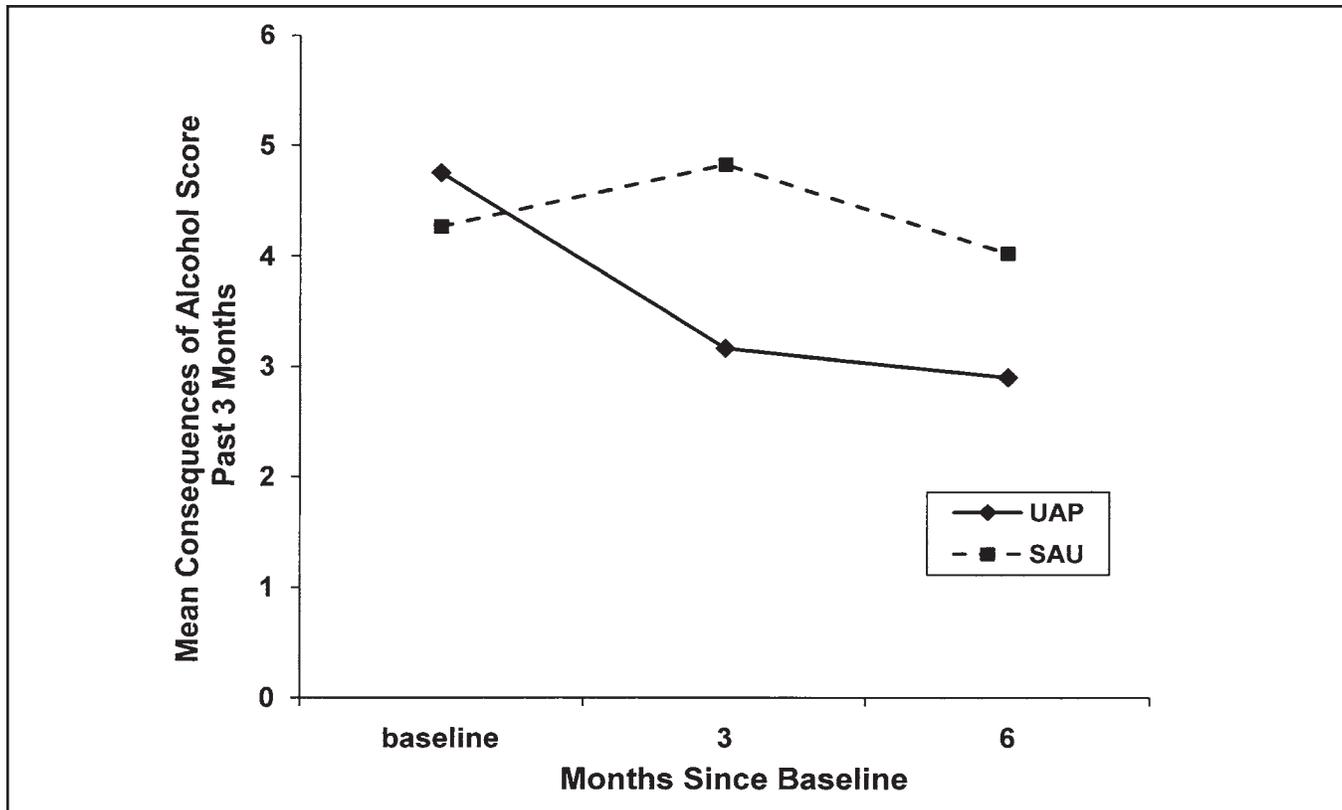


FIGURE 3. Changes in alcohol-related consequences from baseline to 6 months; UAP = University Assistance Program; SAU = services as usual

randomized to services as usual. Growth curve analyses showed significant differences in past-90-day coping skills between students randomized to UAP and those randomized to SAU ( $z = -2.50, p < .01; d = -1.60$ ). The mean trajectory of coping skills for participants in UAP neither increased nor decreased between baseline and 6 months (Figure 4). On the other hand, coping skills decreased over time for participants randomized to SAU.

*Hypothesis 6: Over time, students randomized to the University Assistance Program will use protective behaviors more often when socializing with alcohol than those randomized to services as usual.* Growth curve analyses showed significant differences in past-90-day use of protective behaviors between students randomized to UAP and students randomized to SAU ( $z = -2.16, p < .03; d = -1.98$ ). Although use of protective behaviors when socializing with alcohol increased for both groups (Figure 5), as reflected in lower scores, use of protective behaviors increased at a higher rate in students randomized to UAP than in those randomized to SAU.<sup>1</sup> Thus, the UAP was more efficacious in increasing the

use of protective behaviors when socializing with alcohol than SAU.

### Discussion

This trial is the first to evaluate the effectiveness of a Student Assistance Program with mandated students. The mean trajectory of weekday alcohol consumption decreased for students randomized to UAP, whereas it increased for those randomized to SAU. In addition, the mean trajectory of alcohol-related consequences decreased in UAP students from baseline to 6 months, whereas for participants in SAU the trajectory of alcohol-related consequences increased between baseline and 3 months and then decreased to the level it was at baseline. Furthermore, we found that, although coping skills decreased over time for participants randomized to SAU, the mean trajectory of coping skills for participants randomized to UAP was stable over time.

Finally, although use of protective behaviors when socializing with alcohol increased for both groups, it increased at

<sup>1</sup>Linear growth curve analysis assessed differences in trajectories of scores for each group and compared the rates of change between groups from baseline to 6 months. Figure 5 represents the linear growth curve model comparing the rate of change in use of protective behaviors between the

two groups from baseline to 6 months. Although the mean score for SAU was lower at 6 months, compared with UAP, the rate at which use of protective behaviors increased was higher for UAP than it was for SAU.

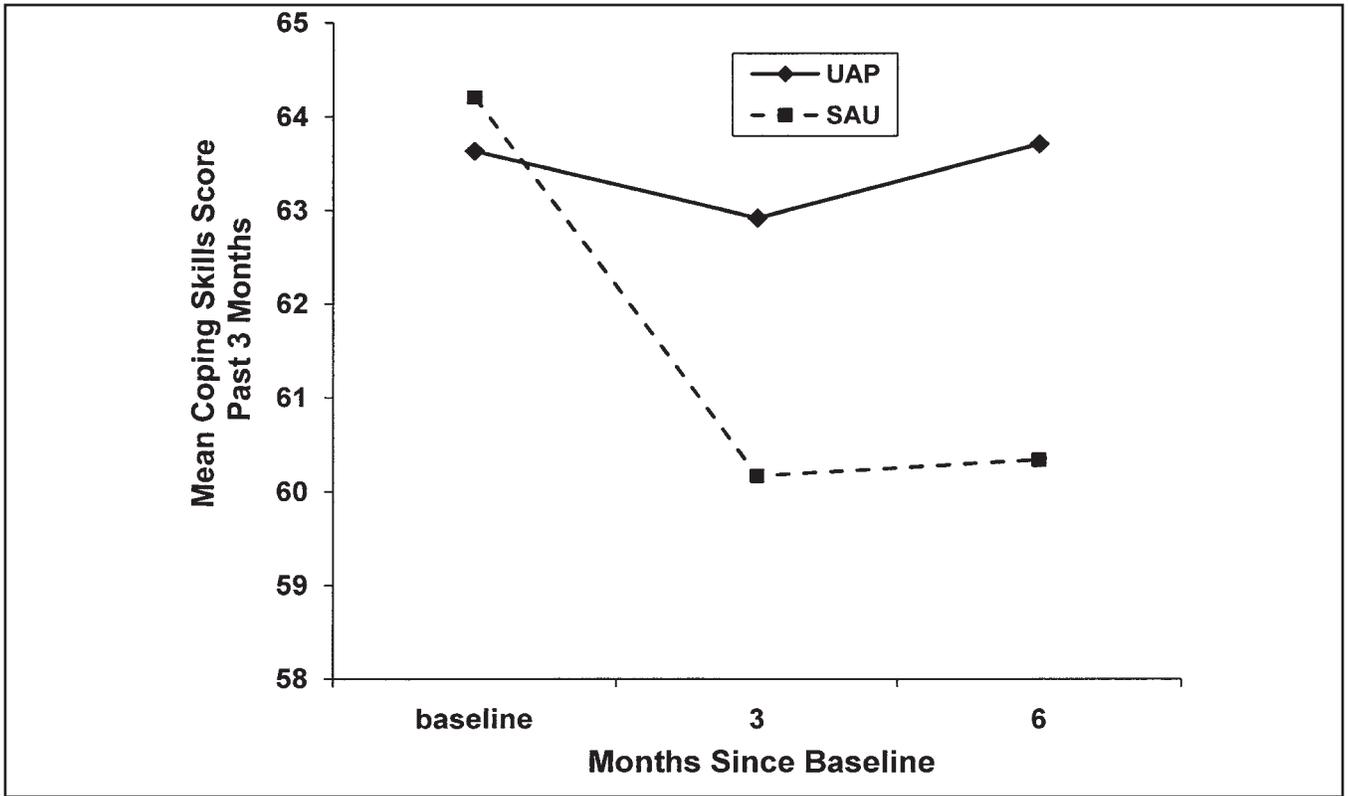


FIGURE 4. Changes in coping skills from baseline to 6 months; UAP = University Assistance Program; SAU = services as usual

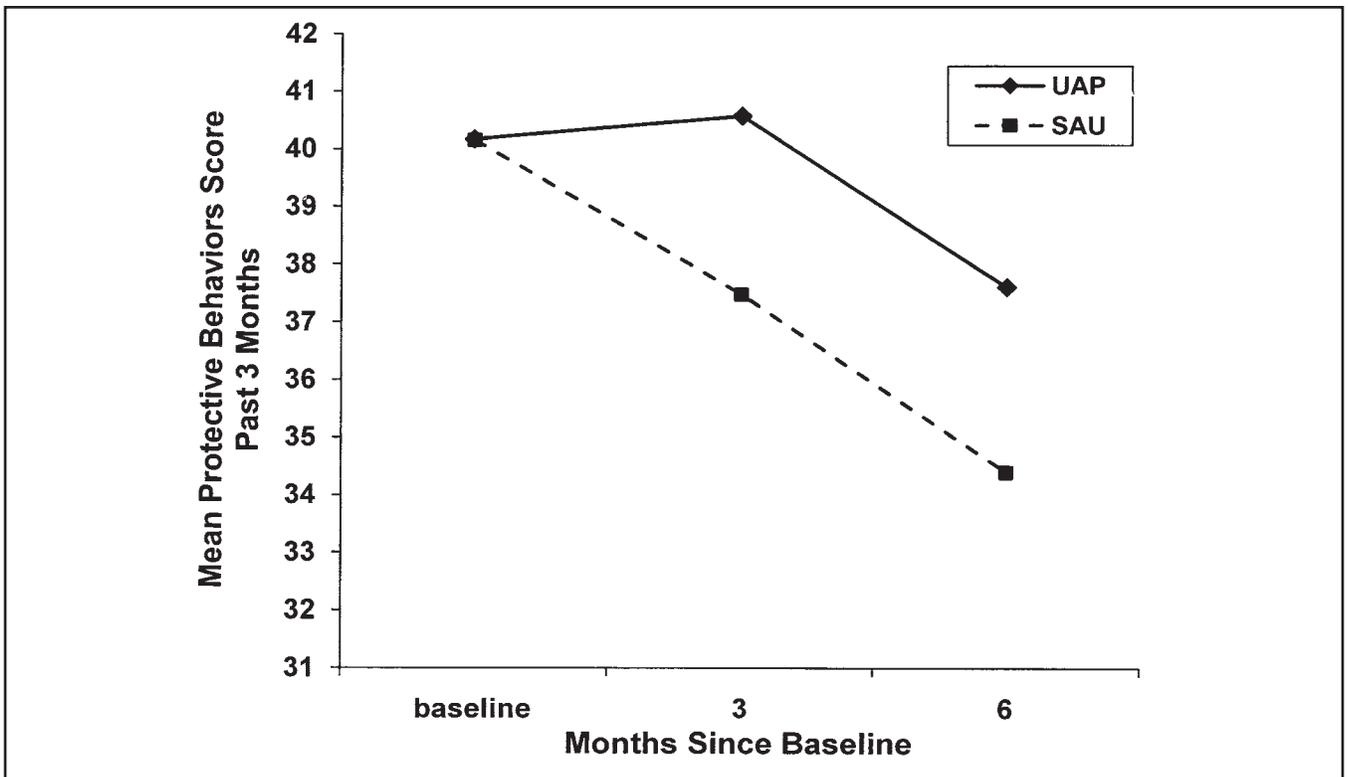


FIGURE 5. Changes in use of protective behaviors from baseline to 6 months; UAP = University Assistance Program; SAU = services as usual

a higher rate in students randomized to UAP than in those randomized to SAU. Contrary to our hypotheses, we did not find group differences on past-90-day total weekly or weekend alcohol consumption, heavy episodic drinking, or blood alcohol concentration on a typical drinking occasion.

The findings that UAP was associated with reductions in weekday drinking and related harmful consequences, as well as with increases in protective behaviors, are consistent with previous findings on BMIs with mandated students (Larimer and Crouce, 2007). In addition, the present study found that participation in UAP was associated with stable coping skills, compared with deterioration in the SAU condition. In comparison with studies that found over-time reductions in alcohol consumption (Borsari and Carey, 2005; LaChance, 2004; White et al., 2006), the present study found over-time reduction in weekday alcohol consumption but not in weekly or weekend alcohol consumption, heavy episodic drinking, or blood alcohol concentration. As suggested by Morgan et al. (2008), it is possible that mandated students in our study may have already changed their alcohol use and related behaviors as a result of the impact of sanctions before they began receiving treatment services. Measuring the impact of the incident, reactions to it, and its long-term effects is difficult, however, and requires further research using more complex and sophisticated designs.

It appears that UAP assisted students in maintaining broader coping skills; the findings suggest that mandated students who do not receive efficacious interventions show over-time deterioration in their substance abuse-related coping skills. Studies examining coping strategies, such as learned resourcefulness in college students (Carey et al., 1990), found that heavy drinkers were lower on learned resourcefulness than were light and moderate drinkers. Similarly, findings from recent studies on coping motives and affect (Armeli et al., 2008; Martens et al., 2008) highlight the importance of addressing coping skills. However, studies examining the efficacy of interventions with mandated students have not yet included coping skills as an outcome. Future intervention studies may benefit from assessing coping skills along with alcohol use and alcohol-related consequences.

The findings are encouraging and support the effectiveness of BMI in the context of enhanced services in the UAP. However, results did not demonstrate a decrease in heavy drinking episodes, weekend drinking, or overall drinking, suggesting additional services may be necessary to affect these outcomes in a mandated sample.

### *Limitations*

Several limitations of the study should be considered in interpreting the results. First, reliance on self-reported alcohol use rather than a biological measure or collateral report may have resulted in underreporting. Web-based surveys such as those used in our study have been shown to

have good test-retest reliability and result in similar self-reported use as paper surveys in college students (Miller et al., 2002). Second, although clinicians received training and ongoing supervision on BMI principles and BASICS specifically, no fidelity measures were obtained. Third, the 6-month follow-up period may not have been sufficiently long to observe some impacts of the intervention among students who have had a recent serious incident (Barnett et al., 2007). Fourth, the lack of a natural history control group makes it impossible to ascertain whether changes may have occurred without interventions. There are ethical and practical reasons that limit the use of other study designs, such as a wait-list control or a no-treatment control with adjudicated or mandated students.

Finally, the generalizability of the findings is somewhat limited because the study was conducted at one private university with a largely white, male, and freshman sample. Although many studies (Borsari et al., 2007b; Fromme and Corbin, 2004; White et al., 2008) of mandated students have samples demographically similar to ours, there is a need to assess if the intervention tested here is similarly effective with female and ethnic minority student populations.

### *Implications*

Findings from this study have implications for college programs for students with alcohol policy violations. We found greater use of protective strategies and coping skills in the UAP intervention, indicating a possible advantage over SAU for mandated students. Given the current cost of programs for mandated students and the prevalence and wide-ranging negative consequences of alcohol-related incidents among college students (Hingson et al., 2005; Porter, 2006; Tevway et al., 2007), we suggest that the cost of maintaining a UAP model is worthwhile. However, cost-effectiveness studies are needed.

Future studies should also consider testing the effectiveness of tailoring interventions to mandated students' risk profiles and violations history, such as a stepped care model (Borsari et al., 2007b). For example, lower cost intervention-group and Web-based approaches using BMI may be appropriate for some mandated students, whereas others may require individual interventions, such as that provided in the UAP.

The absence of reductions in heavy drinking episodes, weekend drinking, overall drinking, and blood alcohol concentration indicates that additional and/or more intensive services may be necessary to affect these outcomes in a mandated sample. Previous studies using BMIs with mandated students (Larimer and Crouce, 2007) have reported that interventions were delivered in either a group or one-on-one format and consisted of one or two sessions; the length of each session ranged from 45 minutes to 4 hours, with or without a booster session. Further research on using BMIs

with mandated students is needed to clarify the level and intensity of services needed for positive changes in alcohol use and related outcomes.

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